Exercise 1 (a) *The average rate of change of the sine function on the interval* $\left[0, \frac{\pi}{2}\right]$ *is* $AV_{\left[0,\frac{\pi}{2}\right]} = \boxed{\frac{2}{\pi}}$.

(b) *The average rate of change of the sine function on the interval* $\left[0, \frac{5\pi}{2}\right]$ *is* $AV_{\left[0,\frac{5\pi}{2}\right]} = \boxed{\frac{2}{5\pi}}$.

(c) *The average rate of change of the sine function on the interval* $\left[\frac{\pi}{2}, \pi\right]$ *is* $AV_{\left[\frac{\pi}{2},\pi\right]} = \boxed{-\frac{2}{\pi}}$.

(d) *The average rate of change of the sine function on the interval* $\left[\frac{\pi}{2}, \frac{5\pi}{2}\right]$ *is* $AV_{\left[\frac{\pi}{2},\frac{5\pi}{2}\right]} = \boxed{0}$.

(e) *Select all intervals on which the sine function is increasing.*

Select All Correct Answers:

(i) $\left(\frac{\pi}{2}, \pi\right)$

(ii) $\left(0, \frac{\pi}{2}\right)$ ✓

(iii) $(0, \pi)$

(iv) $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$ ✓

(v) $\left(0, \frac{5\pi}{2}\right)$

Acknowledgements: Active Prelude to Calculus
(https://activecalculus.org/prelude)